Before the
Federal Communications Commission
Washington, D.C. 20554

MM Docket No. 86-144

In the Matter of

Review of Technical Parameters
For FM Allocation Rules of Part 73,
Subpart B, FM Broadcast Stations.

MEMORANDUM OPINION AND ORDER
(Proceeding Terminated)

Adopted: April 27, 1990; Released: June 19, 1990

By the Commission: Commissioner Quello dissenting and issuing a statement in which Commissioner Duggan joins; Commissioner Barrett concurring in the result and issuing a statement.

INTRODUCTION

1. The Commission has before it a Petition for Reconsideration ("Petition") filed on May 15, 1989, by the Association for Broadcast Engineering Standards ("ABES") concerning action taken in the *Third report and Order ("Third Report")* in this proceeding[1] which amended Part 73 of the Commission's Rules to provide a uniform level of protection for FM radio receivers from intermediate frequency ("IF") interference. Two FM stations are IF-related when their assigned frequencies are 10.6 or 10.8 MHz (53 or 54 channels) apart in frequency. IF interference to FM broadcast receivers may occur when they are located in an area served by two very strong signals from IF-related stations.[2]

2. In the *Third Report* we adjusted the minimum distance separation requirements for all FM stations in order to prevent overlap of their predicted 36 mV/m median field strength contours, regardless of the classes of the two IF-related stations. This adjustment replaced the former scheme of IF protection which applied fundamentally different separation requirements to different classes of stations. The effect of the former rule was that Class A stations (the most numerous) and Class C stations (the most powerful) were prevented from creating overlap of their 36 mV/m contours, while the class C1, C2, B and B1 stations were required to afford somewhat more protection. [3] The *Third Report* concluded that the additional protection was not necessary and that a uniform protection level would provide some licensees with additional flexibility in selecting transmitter sites. The *Third Report* also added a new minimum distance separation requirement applicable only to FM Channel 253 (98.5 MHz) and TV Channel 6 ("TV 6"), also based on the 36 mV/m protection level.[4]

3. ABES' Petition requests that the Commission set aside the rules adopted in the *Third Report* establishing a uniform 36 mV/m protection level for all classes of FM stations and between FM Channel 253 and TV Channel 6. It also requests that the Commission reopen the record for further study. ABES contends that the new rule was based on a preset course of action, that it failed to reflect any weighing of the showings made by ABES and by other parties who opposed the alleged "reduction" of the IF protection requirements, and that it also relied upon a study conducted by the Commission's Office of Engineering and Technology that was inconclusive and did not provide an adequate technical basis for its adoption. ABES also submits that adoption of the *Third Report* violated "Section 4 of the Administrative Procedure Act"[5] because the rule making culminating in the *Third Report* did not reflect a "reasoned process based on the thoughtful consideration of public comment."

4. Also before us in this proceeding are National Public Radio's ("NPR") Motion for Leave to Late-File Comments in Support of Petition for Reconsideration, Comments of National Public Radio In Support of Petition for Reconsideration, and Comments of the National Association of Broadcasters ("NAB") In Support of Petition for Reconsideration. The Motion of NPR will be granted, and NPR's comments will be considered on their merits.[6] In its comments, NPR contends that since public radio stations generally transmit signals that have greater audio dynamic range and commensurately lower average modulation, they will be disparately affected by IF interference. NPR also argues that the record in this proceeding supports the need for retention rather than relaxation of existing IF protection requirements; that such relaxation is contrary to the public interest unless the Commission first exercises its authority under Section 302 of the Communications Act of 1934, as amended, to establish appropriate performance standards for home receivers; and that the Commission should re-open the record because it has failed to consider potential reception by FM receivers of IF interference caused by other sources, including aeronautical navigation station assignments up to 118.9 MHz and the "TV 5 aural/FM Channel 223 relationship." NPR posits that these additional IF relationships warrant further investigation. NAB agreed with ABES that the Commission did not establish a reasonable basis for changing its protection standards and that additional, comprehensive FM receiver interference susceptibility studies are needed before the Commission can make an informed decision.

BACKGROUND

5. In BC Docket 80-90, the Commission expanded FM service to the public by increasing the number of station classes, thereby providing new opportunities for additional stations and upgrading of existing stations. Recognizing that IF interference protection standards had to be set for the newly created classes of FM stations, we decided that the existing distance separation requirements for Class B stations would apply to class B1 and C2 stations and those for Class C stations would apply to Class C1 stations. In 1986, we opened this proceeding by adopting a *Notice of Proposed Rule Making* (" *Notice* ") to reexamine some of the technical aspects of the BC Docket 80-90 decisions, including the IF protection requirements.[7]

6. The *Notice* concluded that the existing IF spacing requirements should be reexamined. The *Notice* observed that, while our intent had been to prevent the overlap of 20 mV/m field strength contours for Class A, Class B, and Class C stations, the current spacing requirements, adopt-

ed in 1965,[8] did not, in fact, prevent that overlap. The rules established in BC Docket No. 80-90 required the new classes to meet the same separation requirements as the larger classes of FM stations, even though the former generally operate at lower ERP and HAAT. The *Notice* proposed that separation requirements for the new stations be reduced to provide a 30 mV/m protection level which would have been about the same as the average of the various protection levels for Class A, Class B and Class C stations which had been assigned since 1965.

7. The record regarding IF interference compiled in response to the *Notice* was inconclusive. Some commenters stated that there is no IF interference problem and that IF spacing requirements should be abolished or relaxed for all of the station classes, new and old. Others stated that IF interference is a serious problem and that we should not change any of these requirements. Although IF interference results primarily from receiver inadequacies, we received no comments or information from receiver manufacturers or trade organizations representing receiver manufacturers. Moreover, our laboratory was then in the process of evaluating IF interference susceptibility in various categories of consumer FM broadcast receivers, and had not yet reported its findings. This led us to conclude in the *Second Report and Order* [9] that adoption at that time of minimum distance separation requirements based on the 30 mV/m protection level would have been premature. We stated that a more complete record might enable us to determine an appropriate standard and to develop minimum distance separation requirements that would provide a uniform level of protection applicable to all classes of FM stations rather than maintaining the various existing levels.

8. Consequently, we issued a *Further Notice of Proposed Rule Making* ("*Further Notice* ") in order to develop a more comprehensive record concerning the IF issue.[10] The *Further Notice* also expanded the scope of the proposal to include consideration of existing IF distance separation requirements and new requirements applicable to TV Channel 6 allotments near FM Channel 253 allotments and assignments (and vice versa).

9. In the *Further Notice*, we proposed IF minimum distance separation requirements for all FM station classes and for the TV Channel 6/FM Channel 253 pairing based on a uniform protection level of 36 mV/m. We selected 36 mV/m because it is the least restrictive level with which we have had satisfactory, long-term operating experience. We invited interested parties, particularly receiver manufacturers or organizations representing receiver manufacturers, to submit further data or test results that would support or oppose on technical grounds our choice of 36 mV/m, or to suggest an alternative protection level.

10. The comment period for the *Further Notice* was extended, following a request by the Electronics Industries Association/Consumer Electronics Group ("EIA/CEG")[11] to provide additional time for commenters to examine the technical data in a report prepared by our laboratory ("OET Study") concerning the susceptibility of commercial FM receivers to IF interference.[12] The period for reply comments was also extended in order to permit a full record to be developed.[13]

DISCUSSION

11. Initially, we hold that the adoption of the *Third Report* was consistent with the Rule Making requirements of the APA, 5 U.S.C. 553. The decision to adopt a uniform protection level of 36 mV/m was a reasonable choice supported by public interest factors and based upon careful review of the entire record, including comments filed by ABES, as well as our own experience and expertise. We based our decision to adopt a uniform protection level on a determination that there was no technical basis justifying the inconsistencies embodied in the multiple protection levels in the former rules. Those inconsistencies imposed unfair constraints upon certain classes of stations, obliging them to provide greater IF interference protection than needed. We found further justification for adopting the 36mV/m standard in our experience with the actual use of that standard, which had been both extensive and positive, without significant problems. We concluded that the extension of that standard to the other classes of FM stations would result in more reasonable and consistent treatment of FM station applications, with no significant likelihood of additional interference.[14]

12. ABES argues that our selection of a consistent standard indicates only that the Commission has affirmed consistency only for consistency's sake. ABES notes that the "Commission's rule (sic) are replete with instances where, through grandfathering or otherwise, even the same classes of stations are treated differently." ABES' contention ignores the principle that, as a general matter, it is in the public interest to eliminate inconsistencies in the Rules that lead to inequitable treatment of current licensees or applicants.[15] We believe the former IF interference protection standard imposed arbitrary and unfair constraints upon Class B1 and C1 FM stations. Although stations in these classes operate with smaller facilities (less power and/or lower antennas) than their Class B and C counterparts, they were nevertheless required to comply with a rule obliging them to be spaced just as far from other stations as stations with greater facilities. The adoption of a uniform standard remedies this inequity.

13. The *Third Report* identified increased site flexibility as a second public interest benefit that results from the adoption of a uniform standard. As the IF distance separation requirements of Section 73.207 increase, some site selection options are precluded. FM stations of the classes that, before release of the *Third Report*, were obliged to provide greater IF-related interference protection than they are required to provide under the uniform rule will now have greater flexibility in selecting their sites. ABES challenges our decision to increase site selection flexibility by arguing that "IF separation requirements are unlikely to be the critical factor in determining most FM antenna site locations. If it was, we would expect to see many more existing stations clustered at the minimum spacings established for each class combination."[16]

14. Questioning the importance of site selection flexibility, ABES also cites paragraph 26 of the *Third Report*, where the Commission acknowledged that there were only twenty-two pairs of IF-related licensed FM stations that were short-spaced under the spacings established in the rule in use before issuance of the *Third Report*. The Commission also acknowledged that under the 36 mV/m protection level it then adopted, the number of pairs of short-spaced stations would be reduced to ten. However, the small scope of the problem does not persuade us that

it is not important. Furthermore, a new Class C3 has been created.[17] Because C3 allotments are currently being made, we believe that there may be a need for the greater future site selection flexibility that is provided by the uniform protection standard. Also, because only a small number of stations appears to be currently site-constrained by the IF spacing requirements, it need not follow that there is no problem to be addressed. On the contrary, it may be a significant problem for individual stations and it would place an unfair burden on them to require a waiver justification for a criterion we do not believe is necessary.

15. Another reason for adopting the 36 mV/m protection level is that for a period of twenty-four years, there has been no demonstration, in the form of complaints or otherwise, indicating that the use of that standard creates IF interference problems either from Class A stations, which operate with the least power and the greatest degree of station-to-station proximity of all FM classes, or from Class C stations, which operate at the highest power levels and with the least degree of station-to-station proximity. By asserting that our adoption of a uniform standard is based on an inadequate record, ABES in effect argues that no positive inferences can be drawn from the absence over a twenty-year period of IF interference complaints concerning the two dominant station classes that have operated under that standard.

16. We recognize ABES' contention that the lack of complaints is due in part to the fact that few stations are operating near the old applicable minimum IF distance separation requirement. While the percentage relative to the total number of stations may be small, there are still a significant number of situations for which the protection level approaches 36 mV/m. If this signal level constitutes a problem, we should have evidence in the form of a reasonable number of interference complaints, because the IF-related signal levels will continually equal or exceed that amount over a relatively small area that is bound to include a number of households. Listeners living in or frequently traveling through areas of high IF-related signal strength are bound to notice the loss of primary service of a desired station. Thus, we believe that listeners, even though they may not understand its mode of action, nevertheless would be aware of cases of IF-related interference and report them to us. Therefore, we infer that the lack of complaints of interference deriving from use of the 36 mV/m standard for over two decades is, at the very least, more probative than not of the operational viability of that standard.

17. ABES argues that, in the *Third Report*, the Commission "based its proposal [to adopt the uniform standard] in large part on tests of FM receivers conducted by the staff of the Commission's Office of Engineering and Technology (OET)."[18] ABES states that in the Engineering Statement it submitted in support of its comments, it "showed that the results [of the OET Study] were far from conclusive and did not provide an adequate technical basis for a change in the current separation standards."[19] Specifically, ABES contends that the OET Study is flawed because "OET only tested receivers with antenna terminals and did not test the popular portable radios with self-contained antennas, such as table radios using line-cord antennas and "walkman"-type radios using headphone-cord antennas."[20] ABES argues that the study revealed a wide range of receiver performance with the poorest receivers exhibiting significant interference even at signal strengths expected in a 20 mV/m protection level environment. Based on its analysis of the OET Study, ABES concludes that OET receiver tests make it apparent that reducing the existing IF separation requirements "may cause a *significant* increase in IF-type interference." ABES takes the position that "based on *information presently available*, the IF-related separations should not be further relaxed at this time."[21]

18. We agree with ABES that the OET Study does not provide a complete picture of the FM IF interference problem, and therefore, does not permit the conclusive selection of the "correct" protection level. However, we reject ABES' argument that our adoption of a uniform standard was "based in large part" on the OET Study. Nowhere in the *Third Report* did we state that the new standard was based to any degree on the OET Study. On the contrary, our discussion of that study focused on only one aspect of the OET Study. Noting that the commenters had interpreted the OET Study in various, sometimes contradictory ways, we stated that the OET Study "says only that given two undesired IF-related FM signals of a given equal strength, the 'average' commercial FM receiver will provide satisfactory reception (free of objectionable IF interference) of a desired signal only if that desired signal has a certain minimum strength. Expressed another way, if the desired signal is strong enough, it can override the interference."[22] Clearly, this analysis of the OET Study did not state that the study provided any part of the basis for our adoption of the uniform standard. Our decision to adopt the uniform standard was based on the public interest considerations discussed *supra*.

19. We also reject ABES' conclusion that because the OET Study failed to consider a certain class of receivers, nothing can be deduced from it. The OET Study did enable us to conclude that susceptibility to IF interference varied widely among receivers of the same general class. We are aware that the OET Study did not test line-cord and "walkman" type receivers.[23] However, the addition of a new class of receivers to the study would not necessarily have supplied data that would increase the study's probative value, because the OET Study made no correlation between the tested samples and their actual distribution among listeners. There is no indication that including portable receivers would have enhanced the outcome by making such a correlation.

20. We also disagree with ABES' extrapolation from laboratory data reflected in Figure 6 of the OET Study to actual IF interference in the real world. Figure 6 does not document instances of actual IF interference in the real world, nor does it necessarily reflect a scientifically objective analysis of the degree to which conditions simulated in the laboratory represent situations in the real world. Rather, Figure 6 merely illustrates what occurs when an imbalance between undesired and desired signals is established, in which the undesired signal(s) are stronger, by varying degrees, than the desired. In the real world, however, if the desired signal is sufficiently strong to override the interference, the receiver's susceptibility will not be noticed. If the desired signal is not strong enough, then interference to certain stations will be noticed consistently over small areas. This, however, has not happened. Despite ABES' conclusion to the contrary, we have no evidence to suggest that significant real world IF interference will result from implementation of the uniform 36 mV/m protection level. In this connection, we also note that Class A and Class C stations would continue to be au-

thorized based on the 36 mV/m protection level even if we were to reverse our decision in the *Third Report*. Because these two classes comprise approximately 70% of all FM stations, only a limited percentage of applicants will be permitted to provide less IF-related protection than they now provide. Most stations will continue to be required to afford the same protection from IF interference as under the previous rule.

21. We find no evidence to support ABES' assertion that the Commission has failed to weigh information received from the receiver manufacturer industry. The Commission specifically requested comment from receiver manufacturers in both the *Notice* and the *Further Notice*. We received no comment from any manufacturers within the initial comment period of either the *Notice* or the *Further Notice*. Upon request of the EIA/CEG, which appears to represent the interests of the receiver manufacturing industry in this proceeding, however, we extended both the *Further Notice*'s comment and reply comment periods. Ultimately, EIA/CEG submitted only limited information, which we fully reviewed.

22. ABES' Petition for Reconsideration also presents no reasonable grounds for reversing our decision to require that FM Channel 253/TV 6 pairings must comply with the uniform 36 mV/m protection standard. The Petition refers to the FM Channel 253/TV 6 relationship only once in relation to the site selection flexibility issue, not to the issue of whether the uniform standard should be used in the FM Channel 253/TV 6 situation. ABES asserts that IF-related short spacings are very rare in the FM service and that the occurrence of short-spacing is "even more minuscule" in the FM Channel 253/TV 6 relation. From this, ABES infers that in selecting transmitter sites, FM stations do not consider IF-interference concerns, and that therefore the Commission is mistaken in its belief that use of the uniform protection standard will confer the public interest benefit of increased site selection flexibility. We find that this discussion by ABES about the FM Channel 253/TV 6 relation does not constitute an opposition to the rule adopting the 36 mV/m protection standard for use in that setting.[24]

23. In its supporting comments, NPR states that public radio stations, in contrast to commercial stations, transmit many of their programs using a greater audio dynamic range and commensurately lower average modulation. NPR contends that for this reason, public stations will be more adversely affected than commercial stations by IF interference. NPR also asserts that the record in this proceeding "amply supports the need for retention of current standards, rather than the relaxation of existing IF protection requirements." In support of this argument, NPR cites the OET Study and ABES' technical analyses.[25]

24. Without an actual increase in IF-related interference, however, the adverse effects that NPR predicts will not occur. As indicated above, NPR's belief that such interference will occur is not adequately supported by the OET Study or by ABES' interpretation of that study. NPR has not otherwise supported its contention with any independent studies. Consequently, we find that NPR has not demonstrated that a uniform standard will expose public radio listeners to any IF-related interference to which they would otherwise not be subject.

25. NPR states that Section 302 of the Communications Act of 1934, as amended, requires the Commission to issue receiver performance standards "which would provide for clear FM reception under the new 36 mV/m IF separations."[26] NPR believes that such standards are needed to relieve receiver owners of the costs of purchasing one or more new receivers in order to obtain satisfactory reception, in the event that reception of IF interference renders their original receivers useless. NPR contends that the "increased risk of interference to a significant number of existing receivers from increased background noise caused by the relaxation of separation requirements does not serve the public."

26. Section 302 of the Communications Act does not impose a duty on the Commission to make regulations establishing new protection standards. On the contrary, it only authorizes us to use our discretion to consider establishing such standards when to do so would further the public interest. On the basis of this record, there are no data or other evidence to persuade us to consider that new standards would further the public interest. No receiver manufacturers have stated, despite ample opportunity to do so, and no technical evidence has been presented which shows, that in a significant number of cases, the new uniform 36 mV/m standard will lead to increased IF interference. Thus there is no reasonable basis to conclude that it would be a reasonable and fair regulatory measure to impose upon manufacturers the costs of developing less susceptible or immune receivers.

27. NPR's fourth and last argument in support of ABES' Petition is that some additional sources of IF-related interference that the Commission has not considered thus far increase our need to reexamine the basis for the uniform standard. NPR, however, presents no data of any kind in support of its contention that any aeronautical navigation station or TV 5/FM Channel 223 pairings are causing IF interference. This alleged mode of IF interference was never mentioned previously in this proceeding, nor do we have any extrinsic evidence suggesting that such interference is a problem.[27] We accordingly must reject NPR's arguments on this point. Should evidence be submitted to us demonstrating that such interference does in fact exist and that it is of such magnitude as to warrant attention, we can open appropriate proceedings at that time.

28. NAB's Comments In Support of ABES' Petition for Reconsideration also fail to persuade us to reconsider our decision in the *Third Report* to adopt a uniform protection standard. Its comments merely reiterate arguments and evidence considered and rejected previously either in the instant *Memorandum Opinion and Order* or in the *Third Report*.[28]

CONCLUSION

29. The record in this proceeding demonstrates that none of our conclusions is contradicted by any methodologically sound technical study. Moreover, only one of our rationales, site selection flexibility, has been specifically opposed by ABES, and for the reasons discussed previously in para. 22, *supra*, ABES' arguments do not persuade us to reconsider our decision. We conclude that each public interest rationale supporting the uniform standard is discernible and reasonable, and that ABES' Petition has not undermined any of those rationales on technical or non-technical grounds.

30. Accordingly, IT IS HEREBY ORDERED, That National Public Radio's Motion to Late-File Comments in Support of the Petition for Reconsideration filed by the Association for Broadcast Engineering Standards, IS GRANTED.

31. And, IT IS FURTHER ORDERED, That the Association for Broadcast Engineering Standards' Petition for Reconsideration IS DENIED.

32. And, IT IS FURTHER ORDERED, That this proceeding IS TERMINATED.

FEDERAL COMMUNICATIONS COMMISSION

Donna R. Searcy
Secretary

FOOTNOTES

[1] *See Third Report and Order* in MM Docket 86-144, 4 FCC Rcd. 3557 (1989).

[2] For example, requiring IF-related FM stations "X" and "Y" to be as far apart as the distance separations specified in §73.207 should prevent a strong signal overlap area within which a receiver seeking to tune in a desired signal from a third FM station "Z" might receive interference. Such interference can manifest itself as increased background noise which degrades reception of station Z's signal. In severe cases, IF interference can prevent reception by the affected receiver of any FM stations in the area.

[3] At the time of the issuance of the *Third Report*, the following were the protection levels that resulted when maximum facility IF-related FM stations were located at the existing minimum spacings contained in Section 73.207:

CLASS RELATIONSHIP	PROTECTION LEVEL
A to A	35.6 mV/m
B1 to B1	11.5 mV/m
B to B	24.6 mV/m
C2 to C2	24.6 mV/m
C1 to C1	17.5 mV/m
C to C	36.7 mV/m

[4] While the extent to which FM reception is protected against IF interference is often discussed in terms of a protection level, the protection results from compliance with the distance separation requirements established in §73.207 of the Commission's Rules. In this proceeding, we refer to the criterion of preventing overlap of two equal contours of IF-related stations as a particular "protection level." For example, preventing overlap to two stations' 36 mV/m contours is referred to as a "36 mV/m protection level." The field strength of the overlap contour, however, is not explicitly prescribed by rule. Only the distance separation requirement is prescribed.

[5] 5 U.S.C. 553.

[6] Because consideration of NPR's comments will not impede the resolution of this matter or prejudice any of the parties, we will grant NPR's motion to late-file its supporting comments.

[7] *See Notice of Proposed Rule Making* in MM Docket 88-144, 104 FCC 2d 160 (1986).

[8] *See Report and Order* in Docket No. 15934, 5 RR 2d (P & F) 1679 (1965).

[9] *See Second Report and Order* in MM Docket 86-144, 2 FCC Rcd 5693 (1987). *recon. granted in part and denied in part*, 3 FCC Rcd 2477 (1988).

[10] *See Further Notice of Proposed Rule Making* in MM Docket 86-144, 3 FCC Rcd 1661 (1988).

[11] *See Order Granting Motion For Extension of Time For Filing Comments*, DA 88-704, 3 FCC Rcd 2818 (1988).

[12] *See* "Laboratory Test Results of the FM-IF Interference in Broadcast Receivers," Project EEB-86-8, OET Technical Memorandum FCC/OET TM 87-4, June 1987, prepared by J. Ray Hallman and Kenneth R. Nichols.

[13] *See Order Granting Request For Extension of Time To File Reply Comments*, DA 88-1184, 3 FCC Rcd 4773 (1988).

[14] *See Third Report* at paras. 28-30.

[15] Occasionally, inconsistency in the treatment of a particular class of station is unavoidable. For example, the Commission recently redefined what constitutes maximum facilities for Class A FM stations. This redefinition imposed additional spacing requirements that could not be met by some current Class A stations. Those stations are now considered "short spaced" and must be governed by "inconsistent" rules intended to permit their continuance. However, we believe that the application of inconsistent rules and policies is justified by unique circumstances intended to benefit licensees as a whole. Because we do not expect any significant increase in IF interference as a result of action taken in the *Third Report*, there is no benefit in retaining inconsistent IF separation requirements.

[16] *See* ABES' Petition at para. 7.

[17] *See First Report and Order* in MM Docket No. 88-375, 4 FCC Rcd 2792 (1989), 54 Fed. Reg. 16363 (April 24, 1989), in which the Commission authorized the allotment of Class C3 stations and established distance separation requirements for that class, including IF interference separation requirements.

[18] *See* ABES' Petition at para. 5.

[19] *Ibid.*

[20] *Ibid.*

[21] *See* ABES' Petition at para. 6.

[22] *See Third Report* at paragraph 20.

[23] We think it reasonable to assume, however, that the performance of "walkman" type receivers may not differ significantly from the receiver models tested in the OET Study. Whereas the latter were dependent upon external antennas and probably afforded superior circuitry shielding (at least in the case of automotive receivers), portable receivers may have minimal circuitry shielding, but also less efficient receiving antennas. Therefore, depending upon the modality of IF-related signal impairment of portable receivers (i.e., whether the interfering signals are introduced through either the antenna or other receiver circuitry) a similarly wide range of receiver susceptibility is possible. Thus, we conclude that data concerning the performance of portable receivers was unlikely to affect our final decision.

[24] However, if a request for reconsideration of our adoption of the 36 mV/m protection standard for use in the FM Channel 253/TV 6 relation is considered implicit in ABES' Petition, we do not find any basis for such reconsideration. We noted in the *Third Report* that the aural transmitter of a TV station on Channel 6 is similar to that of an FM station in its potential to cause IF interference. Because of the technical similarity between IF-related TV/FM stations in this pairing and any two IF-related FM stations, our public interest rationale in support of a uniform standard and our analysis of all technical issues apply in the FM Channel 253/TV 6 setting.

[25] Specifically, NPR states that the OET Study "found that some receivers were prone to significant interference at existing 20 mV/m IF protection levels. The receivers tested were of a single type (those employing external antennas) and, according to ABES. . . are less likely to exhibit IF interference than those with internal and line cord antennas." However, no evidence has been submitted which demonstrates that this is the case.

[26] In relevant part, Section 302(a) provides as follows: "The Commission may, consistent with the public interest, convenience, and necessity, make reasonable regulations. . . (2) establishing minimum performance standards for home electronic equipment and systems to reduce their susceptibility to interference from radio frequency energy."

[27] We note that the power of aeronautical navigation stations is substantially less than FM or TV stations and thus presents a much diminished interference potential. This, as well as expected better receiver front end rejection of undesired signals that are well outside of the FM band, no doubt explains why no complaint of such interference has ever been received. Therefore, no further study of this phenomenon appears necessary.

[28] In its Comments, NAB references two technical studies not mentioned by ABES in its Petition, i.e. *A Review of the FM IF Taboo in Contemporary FM Broadcast Receivers In Laboratory Tests* (filed by NAB on August 26, 1986 in Comments in this proceeding) and Comments of Greater Media, Inc.(filed July 12, 1986 with Test Results Appendix). NAB claims that these technical studies, in conjunction with the OET Study and the EIA/CEG study, provide a basis for reconsideration of the *Third Report* because they indicate that since FM receivers can suffer from IF interference under the disparate protection standards used prior to our adoption of the *Third Report,* it follows that under the allegedly less protective uniform standard adopted in that *Report,* IF interference is more likely to occur. Thus, NAB contends that if the Commission had given due consideration to these four technical studies, it would have retained the former disparate standards. We find NAB's contention without foundation because its rests upon the argument, rebutted above, that our adoption of a uniform standard was based on our interpretation of technical studies rather than on non-technical grounds. Moreover, in the *Third Report,* we discussed the technical studies contained in the NAB and Greater Media comments, finding that the record of which they are a part was inconclusive because it "does not point to any one particular protection level as an optimum choice." 4 FCC Rcd at 3559.

Dissenting Statement of
Commissioner James H. Quello
in which
Commissioner Ervin S. Duggan Joins

Re: Memorandum Opinion and Order, Review of Technical Parameters for FM Allocation Rules of Part 73, Subpart B, FM Broadcast Stations, MM Docket No. 86-144.

I dissented from the Commission's *Third Report and Order* in this proceeding because I thought the record was insufficient to demonstrate that the 36 mV/m standard would protect against additional interference and because I believed the majority's approach exalted a desire for consistency over a concern for the technical integrity of FM radio. Nothing in the Commission's discussion of the issues on reconsideration allays these concerns. Consequently, I respectfully dissent from today's decision.

The consequences of any new rule that would tend to increase the amount of IF interference could be enormous. As the Commission most recently acknowledged in another proceeding, "IF interference has more serious consequences than co-channel and adjacent-channel interference. For example, IF interference can prevent reception of *all* FM stations in the area than just the IF-related stations." *Edens Broadcasting, Inc.,* FCC 90-126 (released April 19, 1990) (emphasis added).[1] *See also Walter P. Faber, Jr.,* 4 FCC Rcd. 5492, 5494 n.7 (1989). Given the stakes involved, one would think that the Commission has compelling proof that its new technical standards will not result in increased IF interference, or that the public interest benefits more than outweigh any incremental increase in interference. Astonishingly, neither is the case.

The Commission presents no test data documenting the interference potential of its new separation rules. Instead, the majority goes to some length to distance itself from our in-house research, stating that "[n]owhere in the *Third Report* did we state that the new standard was based to any degree on the OET Study." Order ¶18. The majority devotes considerable energy criticizing the OET Study, which the Commission acknowledges does not support "the conclusive selection of the 'correct' protection level." *Id.* In fact, the Commission expressly eschews reliance on any research, choosing instead to justify our new technical rules "on non-technical grounds." *Id.*at ¶28 n.28. While this preference not to be confused with the facts may be necessary to permit the Commission to reach the conclusion it has chosen,[2] it provides little assurance that FM stations will not face the prospect of increased interference.

Lacking theoretical support, the majority looks to the past in order to justify our future technical rules. It concludes that the lack of interference complaints arising from the 36 mV/m standard that has been applied for twenty years to Class A and Class C stations is proof that no interference will result when the standard is applied to all classes. *Id.* ¶15. But this assumes that our past experience will continue when all FM stations are operating under a more relaxed standard. It further assumes that a lack of complaints in the past accuratley reflects the experience of the listening public. As I pointed out in my dissent to the *Third Report,* most radio listeners that encounter interference are unlikely to report the problem. 4 FCC Rcd. at 3564. In any event, it is bad policy to delegate our statutory responsibility to prevent interference by establishing a "public grumbling" standard.

The majority's reliance on our previous experience with Class A and C stations also reveals the double standard it is imposing on petitioner. At the same time it relies on the historical absence of complaints, the Commission rejects petitioner's argument that site selection flexibility is unneeded "because it is based solely on data gathered in the past." Order ¶29. This "heads I win, tails you lose" tactic highlights the overall weakness of the Commission's argument for changing the IF interference rules. I continue to believe, however, that "[t]he burden in the instant proceeding should be placed squarely on those parties seeking to change our current IF separation requirements." 4 FCC Rcd. at 3563. The Commission simply has failed to meet this burden of proof.

Additionally, the purported public interest benefits of the new policy are speculative, and, even if realized, appear to be minimal.[3] While the majority "believe[s] that there *may* be a need for greater future site selection

flexibility," Order ¶14 (emphasis added), it does not identify the magnitude of this presumed need. Although it notes that the problem caused by the current separation rules is one of "small scope," it concludes that there "*may* be a significant problem for individual stations." *Id.*(emphasis added). However, as petitioner notes, very few station are operating at or near the existing permissible separation distances, and currently there are only 22 pairs of IF-related FM stations that are shortspaced under the current rule. "This is one-half of one percent of the approximately 4,200 commercial stations now authorized."[4]

Finally, I am concerned that the Memorandum Opinion and Order the Commission adopts today is inconsistent with our recent efforts to reduce interference in the AM band. At our April 12 open meeting we adopted new methods for measuring AM groundwaves and skywaves,[5] approved new procedures to allow AM broadcasters to enter agreements to reduce interference[6] and launched a rulemaking designed to result in the "transformation and revitalization of the AM broadcast service," chiefly by reducing congestion and interference in the band.[7] We also have adopted new rules pertaining to the authorized bandwidth permitted AM stations to combat interference between stations operating on nearby adjacent channels.[8] While I do not attempt to equate the problems of AM and FM radio, the Communications Act requires that we adopt regulations "to prevent interference between stations" in order to promote "a rapid, efficient, Nation-wide, and world-wide wire and radio communication service,"[9] regardless of band. By searching for uniformity among the trees of our IF interference separation rules, I fear the Commission has lost sight of the need for consistency in the forest of our statutory mandate.

I hope that I am being overly cautious and that our rule change will not lead to increases in IF interference. I hope the increase in site selection flexibility and the move toward uniformity of our separation requirements will prove to be true public benefits. But I am not convinced that the Commission has before it the evidence to answer any of these questions. Until it does, the rules should not be changed. Accordingly, I dissent.

FOOTNOTES TO STATEMENT

[1] *Edens Broadcasting* involved a request for waiver of Section 73.207 of our rules to permit short-spacing of an antenna site for a Class C FM station and therefore posed a greater risk of increased interference than does the Commission's current decision. The point is, however, that any action which creates a greater risk of IF interference can cause significant adverse effects.

[2] The OET test results suggest that increased interference may well result from relaxing the separation requirements. The OET Study detected "a wide range of performance" in the thirty receivers studied, and found" [t]he receivers which had the poorest U/D (undesired to desired) ratios exhibited significant interference even at levels typical of the existing 20 mV/m separations." *See* ABES Petition for Reconsideration at 4.

The Study may well have understated the interference potential because it did not test line-cord and the increasingly popular "walkman" type receivers which may be more susceptible to interference. Rather than seeking to collect additional data, the majority merely thinks it is "reasonable to *assume* . . . that the performance of 'walkman' type receivers *may* not differ signigicantly from the receiver models tested in the OET Study." Order at ¶19 n.23(emphasis added).

[3] While I share the Commission's interest in making our rules consistent, this interest does not outweigh countervailing concerns - particularly those related to interference. The majority acknowledges that inconsistencies may be necessary in certain circumstances, such as when a change in the rules would lead to increased interference. *Cf.* Order at ¶12 n.15.

[4] ABES Petition at 5. *See also Third Report and Order*, 4 FCC Rcd. at 3560. The minute scope of the site flexibility problem presents us with a trade-off with respect to interference potential. To the extent the new rules encourage a large number of licensees to move their facilities, the less relevant our past experience becomes. But it was this past experience-- with the old rules in place--that convinced the majority that there would be no significant increase in interference.

[5] Report and Order in MM Docket No. 88-510. Improve Methods of Calculating Groundwave Field Strength in the AM Service, FCC 90-139 (adopted April 12, 1990); Report and Order in MM Docket No. 88-508, Improved Methods of Calculating Skywave Field Strength in the AM Service, FCC 90-138 (adopted April 12, 1990).

[6] Report and Order in MM Docket No. 89-46, Amending Sections 73.1750, 73.3517 and 73.3571 of the Rules, and Revising Policies With Respect to Reduction in AM Interference, FCC 90-137 (Adopted April 12, 1990).

[7] Notice of Proposed Rulemaking in MM Docket No. 87-267, Review of the Technical Assignment Criteria for the AM Broadcast Service, FCC 90-136 (adopted April 12, 1990).

[8] Memorandum Opinion and Order in MM Docket No. 88-376, Amendment of the Commission's Rules to Improve the Quality of the AM Broadcasting Service by Reducing Adjacent Channel Interference, FCC 90-68 (released April 20, 1990).

[9] 47 U.S.C. §§ ¶ 151, 303(f).

CONCURRING STATEMENT OF COMMISSIONER ANDREW C. BARRETT

Re: Review of Technical Parameters for FM Allocation Rules of Part 73, Subpart B, FM Broadcast Stations MM Docket No. 86-144

Although I support the decision in this Memorandum Opinion and Order (Order), I write separately to express my concern about one aspect of this docket.[1] I am concerned that the Commission was unable to obtain specific technical findings to support the decision in this Order. The Order authorizes a uniform 36 mV/m IF distance separation requirement (separation requirement) for certain classes of FM stations. The Order cites several justifications for this action, including: (1) increased site flexibility for certain classes of FM stations; (2) the lack of interference complaints from the Commission's use of the separation requirement for Class A and Class C FM stations; and (3) the lack of technical justification for the multiple separation requirements under the former rules. The Order does not utilize specific test data to justify the new separation requirement. While I believe other factors listed in the Order offset the lack of supporting test data in this instance, I want to express my general view that, where possible, the Commission should obtain valid test data to support the selection of technical separation standards. If such data is not provided in filings from outside

parties, the Commission should obtain this information through its own resources. In this docket, the Commission, since 1986, has endeavored to obtain valid technical findings to support or refute the selection of a separation requirement. However, during the pendency of this docket, it appears that no such findings have been presented, either by outside parties or from the Commission staff. Thus, in this instance, while I support the Order based on the justifications cited therein, I am not comfortable with the lack of valid technical findings. In general, I believe such information serves an important role in determining the efficacy of a technical standard. To the extent that the findings in this Order do not reduce the technical possibility of an increase in IF interference, I am concerned.[2] Were it not for all of the other factors listed in this Order and the fact that the Commission can resolve interference complaints on a case-by-case basis, [3] my vote on this Order would have been different.

FOOTNOTES TO STATEMENT

[1] I support this Order because, after reviewing all of the factors in this docket, I believe that this action is consistent with our public interest obligations under the Communications Act. *See,* 47 U.S.C. §§ 151, 303(f). First, the Order promotes better efficiency in the allocation and licensing process for FM stations. Second, the Order does not negate the Commission's serious concerns about IF interference. Indeed, the Order does not prevent the Commission from resolving IF interference problems between stations on a case-by-case basis.

[2] I display this cautious attitude because of my support for the Commission's efforts to reduce broadcast interference in other areas. *See e.g.*, Report and Order in MM Docket No. 88-510, Improved Methods of Calculating Groundwave Field Strength in the AM Service, FCC 90-139 (adopted April 12, 1990); Report and Order in MM Docket No. 88-508, Improved Methods of Calculating Skywave Field Strength in the AM Service, FCC 90-138 (adopted April 12, 1990; Report and Order in MM Docket 89-46, Amending Sections 73.1750, 73.3517 and 73.3571 of the Rules, and Revising Policies With Respect to Reduction in AM Interference, FCC 90-137 (adopted April 12, 1990); Opinion and Order in MM Docket No. 88-376, Amendment of the Commission's Rules to Improve the Quality of the AM Broadcasting Service by Reducing Adjacent Channel Interference, FCC 90-68 (released April 20, 1990).

[3] *See*, 47 C.F.R. Sections 73.1610(b) and 73.1620(b) (1989).